



## Declaration and Power of Attorney

JANNIS

Dean Engelhardt, Elazar Rabbani, Stanley Kline, Janos G. Stavrianopoulos and Dollie Kirtikar declare that we are respectively citizens of the United States of America, residing at 173 Riverside Drive, New York, New York 10024; 69 Fifth Avenue, New York, New York 10003; 235 Lincoln Place, Brooklyn, New York 11217; 515 West 59 Street, New York, New York 10019; and 42-72 80 Street, Elmhurst, New York 11373, respectively.

that we have read the specification entitled:

### MODIFIED NUCLEOTIDES, METHODS OF PREPARING AND UTILIZING AND COMPOSITIONS CONTAINING THE SAME

and the claims thereof; that we understand the content of the foregoing specification, and we verily believe we are the original, first and joint inventors of the invention described and claimed therein; that we do not know and do not believe that this invention was ever known or used in the United States before our invention thereof, or patented or described in any printed publication in any country before our invention thereof, or more than one year prior to this application, or in public use or on sale in the United States more than one year prior to this application; that this invention has not been patented or made the subject of an inventor's certificate in any country foreign to the United States on an application filed by us or our legal representatives or assigns more than twelve months before this application; and that no application for patent or inventor's certificate on this invention has been filed in any country foreign to the United States by us or our representatives or assigns, except as follows:

N O N E

We further declare that we acknowledge our duty to disclose information of which we are aware which is material to the examination of this application.

And we hereby appoint: individually and collectively, Thomas F. Moran, Reg. No. 16,579; Lester W. Clark, Reg. No. 14,954; Christopher C. Dunham, Reg. No. 22,031; Ivan S. Kavrukov, Reg. No. 25,161; John P. White, Reg. No. 28,678; and Mary-Ellen M. Timbers, Reg. No. 27,928, each of them of 30 Rockefeller Plaza, New York, New York 10112, (Tel. 212-977-9550), our attorneys, each with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith and to file any International Applications which are based thereon under the provisions of the Patent Cooperation Treaty.

Lastly, we declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

1<sup>0</sup> Inventor's full name Dean Engelhardt  
(Signature)  
Dean Engelhardt

Date June 22, 1982  
Post Office Address 173 Riverside Drive  
New York, New York 10024 NY

2<sup>0</sup> Inventor's full name Elazar Rabbani  
(Signature)  
Elazar Rabbani

Date July 22, 1982  
Post Office Address 69 Fifth Avenue  
New York, New York 10003 NY

3<sup>0</sup> Inventor's full name Stanley Kline  
(Signature)  
Stanley Kline

Date June 22, 1982  
Post Office Address 235 Lincoln Place  
Brooklyn, New York 11217 NY

4<sup>th</sup> Inventor's full name

J. Stavrianopoulos

(Signature)

James G. Stavrianopoulos

Date June 22, 1982

Post Office Address

515 West 59 Street

New York, New York 10019 NY

5<sup>th</sup> Inventor's full name

Dollie Kirtikar

(Signature)

Date June 22nd 1982

Post Office Address

42-72 80 Street

Elmhurst, New York 11373 NY



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Dean Engelhardt et al.

Serial No.: 07/532,461 Group Art Unit: 1803

Filing Date: May 31, 1990 Examiner:  
John W. Rollins, Ph.D

For:  
**PHOSPHATE - MOIETY LABELED DETECTABLE NUCLEOTIDES**

Honorable Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**COPY,**

SUBSTITUTE POWER OF ATTORNEY

Dear Sir:

Enzo Diagnostics, Inc., a corporation of the State of New York, having its principal place of business at 40 Oak Drive, Syosset, New York, 11791, the owner of the entire right, title and interest in and to the above-identified application and the invention disclosed and/or claimed therein, hereby revokes any and all powers of attorney previously granted herein and appoints as principal attorney, Ronald C. Fedus (Reg. No. 32,567) with full power of substitution and revocation, to prosecute this application, to make alterations and amendments herein, to receive the patent, to transact all business in the Patent and Trademark Office connected therewith and to file any International Applications which are based thereon under the provisions of the Patent Cooperation Treaty.

Please address all communications to:

EXPRESS MAIL CERTIFICATE	
"Express Mail" Label No.	CB743016175
Deposit Date	APRIL 9, 1993
I hereby certify that this paper and the attachments herein are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington DC 20231.	
<i>Ronald C. Fedus</i> APRIL 9, 1993	
Ronald C. Fedus, Reg. No. 32,567	

Ronald C. Fedus, Patent Counsel  
Enzo Biochem, Inc.  
575 Fifth Avenue (18th Floor)  
New York, New York 10017

and direct all telephone calls regarding this application to Ronald C. Fedus at telephone no. (212) 856-0876.

Enzo Diagnostics, Inc.

*B.W. Weiner*  
Barry W. Weiner  
Executive Vice-President

NOVEMBER 9, 1992  
Date

Enz-5 (D6)



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

April 16, 1991  
New York, New York

Honorable Commissioner of  
Patents and Trademarks  
Washington, D.C. 20231

Attn.: Assignment Branch

REQUEST FOR RECORDATION  
OF BLANKET ASSIGNMENT

Sir:

Enclosed herewith please find an original blanket Assignment dated April 4, 1991 between Enzo Biochem, Inc. and Enzo Diagnostics, Inc. This document is being submitted pursuant to 37 CFR 1.331 for recording in the Assignment Division of the Patent and Trademark Office. Please record this document and return the recorded document to the undersigned.

The Patent and Trademark Office is hereby authorized to charge Deposit Account No. 05-1135 for the recordation fee in the amount of \$8.00. The Patent and Trademark Office is also hereby authorized to charge Deposit Account No. 05-1135 for any additional fees required in connection herewith and to credit any overpayment therein.

EXPRESS MAIL CERTIFICATE	
"Express Mail" Label No.	FB 283463026
Deposit Date	April 16, 1991
I hereby certify that this paper and the attachments herein are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington DC 20231.	
<i>Elaine P. Brenner</i> Elaine P. Brenner Reg. No. 29,517	
4/16/91 Date	

Enzo Diagnostics, Inc.  
40 Oak Drive  
Syosset, NY 11791  
(212) 924-5409 or 9578

Respectfully submitted,

*Elaine P. Brenner*

Elaine P. Brenner  
Registration No. 29,517

EXPRESS MAIL CERTIFICATE	
"Express Mail" Label No.	GB743016175
Deposit Date	APRIL 9, 1993
I hereby certify that this paper and the attachments herein are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington DC 20231.	
<i>Ronald C. Fedus</i> Ronald C. Fedus Reg. No. 32,567	
APRIL 9, 1993 Date	

## ASSIGNMENT

In consideration for One Dollar (\$1.00) and other good and valuable consideration, the receipt of which is hereby acknowledged, Elazar Rabbani, the undersigned, on behalf of Enzo Biochem, Inc., the assignor hereunder, a corporation of the State of New York, having a place of business at 345 Hudson Street, New York, New York 10014;

Hereby sells, assigns and transfers to: Enzo Diagnostics, Inc., a corporation of the State of New York, having a place of business at 40 Oak Drive, Syosset, NY 11791, its successors, assigns and legal representatives, the entire right, title and interest for the United States and all foreign countries, in and to any and all improvements which are disclosed in the following applications for Letters Patent:

Serial No.:	140,980
Title:	"Modified Nucleotides, Methods of Preparing and Utilizing and Compositions Containing The Same"
Inventors:	Dean Engelhardt, et al.
Filing Date:	January 5, 1988
(Doc. No.:	Enz-5(C)2)
Serial No.:	539,279
Title:	"Modified Nucleotides, Methods of Preparing and Utilizing and Compositions Containing The Same"
Inventors:	Dean Engelhardt, et al.
Filing Date:	June 15, 1990
Doc. No.:	Enz-5(Div. 2)(C))
Serial No.:	520,682
Title:	"Modified Nucleotides, Methods of Preparing and Utilizing and Compositions Containing The Same"
Inventors:	Dean Engelhardt, et al.
Filing Date:	May 8, 1990
(Doc. No.:	Enz-5(Div. 3))
Serial No.:	532,704
Title:	"Modified Nucleotides, Methods of Preparing and Utilizing and Compositions Containing The Same"
Inventors:	Dean Engelhardt, et al.
Filing Date:	June 4, 1990
(Doc. No.:	Enz-5(Div. 4))

Enzo Diagnostics, Inc.

Serial No.: 531,953  
Title: "Modified Nucleotides, Methods of Preparing and Utilizing and Compositions Containing The Same"  
Inventors: Dean Engelhardt, et al.  
Filing Date: June 1, 1990  
(Doc. No.: Enz-5(Div. 5))

Serial No.: 532,461  
Title: "Modified Nucleotides, Methods of Preparing and Utilizing and Compositions Containing The Same"  
Inventors: Dean Engelhardt, et al.  
Filing Date: May 31, 1990  
(Doc. No.: Enz-5(Div. 6))

Serial No.: 567,039  
Title: "Modified Nucleotides, Methods of Preparing and Utilizing and Compositions Containing The Same"  
Inventors: Dean Engelhardt, et al.  
Filing Date: August 13, 1990  
(Doc. No.: Enz-5(Div. 7))

Serial No.: 548,348  
Title: "Modified Nucleotides, Methods of Preparing and Utilizing and Compositions Containing The Same"  
Inventors: Dean Engelhardt, et al.  
Filing Date: July 2, 1990  
(Doc. No.: Enz-5(Div. 8))

Serial No.: 607,347  
Title: "Methods and Structures Employing Chemically Labeled Polynucleotide Probes"  
Inventors: Jannis Stavrianopoulos, et al.  
Filing Date: October 30, 1990  
(Doc. No.: Enz-7(CIP)C2)

Serial No.: 120,205  
Title: "Kit for Terminally Labeling DNA"  
Inventors: Christine Brakel, et al.  
Filing Date: November 5, 1987  
(Doc. No.: Enz-8(C)2)

Serial No.: 607,787  
Title: "Assay Method Utilizing Polynucleotide Sequences"  
Inventors: Robert Pergolizzi, et al.  
Filing Date: October 26, 1990  
(Doc. No.: Enz-11 (C)2)

Enzo Diagnostics, Inc.

Serial No.: 521,762  
Title: "Detectable Molecules, Method of Preparation and Use"  
Inventors: Dean Engelhardt, et al.  
Filing Date: May 8, 1990  
(Doc. No.: Enz-13 (Div. 4)C2)

Serial No.: 428,087  
Title: "Hybridization Method For The Detection Of Genetic Material"  
Inventors: Dean Engelhardt, et al.  
Filing Date: October 27, 1989  
(Doc. No.: Enz-15(Div. 1))

Serial No.: 590,548  
Title: "In Vivo Labelling of Polynucleotide Sequences"  
Inventors: Jannis Stavrianopoulos, et al.  
Filing Date: September 27, 1990  
(Doc. No.: Enz-16(C) (Div. 1))

Serial No.: 502,199  
Title: "Method For Detecting An Analyte Molety By Means of Signal Localization"  
Inventor: Elazar Rabbani  
Filing Date: March 28, 1990  
(Doc. No.: Enz-24(CIP)/25 C1)

Serial No.: 501,643  
Title: "Method For Detecting An Analyte Molety By Means of Signal Localization"  
Inventor: Elazar Rabbani  
Filing Date: March 29, 1990  
(Doc. No.: Enz-24(CIP)/25 Div.1)

Serial No.: 394,284  
Title: "Novel One Step Method and Polynucleotide Compounds For Hybridizing to Target Polynucleotides"  
Inventors: Jannis Stavrianopoulos, et al.  
Filing Date: August 15, 1989  
(Doc. No.: Enz-26(C))

Serial No.:	479,327
Title:	"Nucleotide Sequence Composition And Method For Detection of Neisseria Gonorrhoea And Method For Screening For A Nucleotide Sequence That Is Specific For A Genetically Distinct Group"
Inventors:	Andrew Lo, et al.
Filing Date:	February 13, 1990
(Doc. No.:	Enz-27(C))
Serial No.:	582,830
Title:	"Polynucleotide Probes And A Method For Their Preparation"
Inventors:	David Mao, et al.
Filing Date:	September 13, 1990
(Doc. No.:	Enz-29(C))
Serial No.:	509,110
Title:	"Polynucleotide Composition and Method"
Inventors:	Huey-Lang Yang, et al.
Filing Date:	April 13, 1990
(Doc. No.:	Enz-31(C))
Serial No.:	443,812
Title:	"Inhibition of Self-Quenching In Specific Binding Assay"
Inventor:	Stanley Kline
Filing Date:	November 29, 1989
(Doc. No.:	Enz-32(C))
Serial No.:	160,607
Title:	"End-Labeled Nucleotide Probe"
Inventors:	Christine L. Brakel, et al.
Filing Date:	February 26, 1988
(Doc. No.:	Enz-34)
Serial No.:	194,702
Title:	"Device With Gradient-Regulated Localized Signal"
Inventors:	Elazar Rabbani, et al.
Filing Date:	May 17, 1988
(Doc. No.:	Enz-35)

Serial No.:	192,256
Title:	"Method For Sample Adherence To Test Substrate"
Inventors:	Huey-Lang Yang, et al.
Filing Date:	May 10, 1988
(Doc. No.:	Enz-36)
Serial No.:	625,584
Title:	"Detection System For Visualizing Proteolysis Of Cellular Proteins"
Inventor:	Maurice Rosenstraus
Filing Date:	December 10, 1990
(Doc. No.:	Enz-37(C))
Serial No.:	304,748
Title:	"Time-Resolved Fluorometer"
Inventor:	Ian Hurley
Filing Date:	January 31, 1989
(Doc. No.:	Enz-38)
Serial No.:	314,995
Title:	"Energy Transfer Hybridization Assay Using Intercalators and Lanthanide Metals"
Inventors:	Elazar Rabbani, et al.
Filing Date:	February 24, 1989
(Doc. No.:	Enz-39)
Serial No.:	342,196
Title:	"Non-Radioactive In Situ Hybridization Assay"
Inventors:	Joanne Spadoro, et al.
Filing Date:	April 21, 1989
(Doc. No.:	Enz-40)
Serial No.:	316,385
Title:	"Dual-Probe Energy Transfer Hybridization Assay"
Inventors:	Ian Hurley, et al.
Filing Date:	February 27, 1989
(Doc. No.:	Enz-41)
Serial No.:	459,030
Title:	"Amplification Capture Assay"
Inventors:	Christine Brakel, et al.
Filing Date:	December 29, 1989
(Doc. No.:	Enz-43)

Serial No.: 633,730  
Title: "Method for Detecting A Target Polynucleotide In A Sample Using A Background Reducing Reagent, And Composition And Kit Comprising Such A Reagent"  
Inventor: Jannis G. Stavrianopoulos  
Filing Date: December 24, 1990  
(Doc. No.: Enz-44)

and in and to said applications for Letters Patent and all divisional, continuing, substitute, renewal, reissue, and all other applications for Letters Patent which have been or shall be filed in the United States and all foreign countries on any of said improvements; and in and to all original and reissued patents which have been or shall be issued in the United States and all foreign countries on said improvements:

Hereby also sells, assigns and transfers to: Enzo Diagnostics, Inc., a corporation of the State of New York, having a place of business at 40 Oak Drive, Syosset, NY 11791, its successors, assigns and legal representatives, the entire right, title and interest for the United States and all foreign countries, in and to any and all improvements which are disclosed in the following United States Letters Patent:

Patent No.: 4,994,373  
Title: "Method And Structures Employing Chemically-Labelled Polynucleotide Probes"  
Inventors: Jannis G. Stavrianopoulos, et al.  
Issue Date: February 19, 1991  
(Doc. No.: Enz-7 (CIP)C)

Patent No.: 4,772,548  
Title: "Radioisotopicassay Using Isotope Transfer To Chelator-Target Recognition Molecule Conjugate"  
Inventor: Jannis G. Stavrianopoulos  
Issue Date: September 20, 1988  
(Doc. No.: Enz-12 (Div. 2))

Patent No.: 4,707,440  
Title: "Nucleic Acid Hybridization Assay And Detectable Molecules Useful In Such Assay"  
Inventor: Jannis G. Stavrianopoulos  
Issue Date: November 17, 1987  
(Doc. No.: Enz-13)

Enzo Diagnostics, Inc.

Patent No.: 4,843,122  
Title: "Detectable Molecules, Method  
Inventor: Of Preparation And Use"  
Issue Date: Jannis G. Stravrianopoulos  
(Doc. No.: June 27, 1989  
Enz-13 (Div. 1))

Patent No.: 4,943,523  
Title: "Detectable Molecules, Method  
Inventor: Of Preparation And Use"  
Issue Date: Jannis G. Stravrianopoulos  
(Doc. No.: July 24, 1990  
Enz-13 (Div. 2))

Patent No.: 4,952,685  
Title: "Detectable Molecules, Method  
Inventor: Of Preparation And Use"  
Issue Date: Jannis G. Stravrianopoulos  
(Doc. No.: August 28, 1990  
Enz-13 (Div. 4))

Patent No.: 5,002,885  
Title: "Detectable Molecules, Method  
Inventor: Of Preparation And Use"  
Issue Date: Jannis G. Stravrianopoulos  
(Doc. No.: March 26, 1991  
Enz-13 (Div. 4)C1)

Patent No.: 4,849,505  
Title: "Detectable Molecules, Method  
Inventor: Of Preparation And Use"  
Issue Date: Jannis G. Stravrianopoulos  
(Doc. No.: July 18, 1989  
Enz-13 (Div. 5))

Patent No.: 4,889,798  
Title: "Heterologous System For The  
Inventor: Detection of Chemically Labeled  
Issue Date: DNA and Other Biological Materials  
(Doc. No.: Providing A Receptor Or Target  
Molety Thereon"  
Elazar Rabbani  
December 26, 1989  
Enz-14(C))

Enzo Diagnostics, Inc.

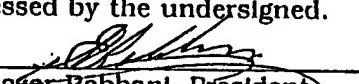
Patent No.:	4,894,325
Title:	"Hybridization Method For The Detection Of Genetic Material"
Inventors:	Dean L. Engelhardt, et al.
Issue Date:	January 16, 1990
(Doc. No.:	Enz-15(P)C)
Patent No.:	4,987,065
Title:	"In Vivo Labelling of Polynucleotide Sequences"
Inventors:	Jannis G. Stravrianopoulos, et al.
Issue Date:	January 22, 1991
(Doc. No.:	Enz-16(C))
Patent No.:	4,755,458
Title:	"Composition And Method For The Detection Of The Presence Of A Polynucleotide Sequence Of Interest"
Inventors:	Elazar Rabbani, et al.
Issue Date:	July 5, 1988
(Doc. No.:	Enz-18)
Patent No.:	4,746,604
Title:	"Specific Binding Assays Utilizing A Viable Cell As A Label"
Inventor:	Solomon Mowshowitz
Issue Date:	May 24, 1988
(Doc. No.:	Enz-21)
Patent No.:	4,900,659
Title:	"Nucleotide Sequence Composition And Method For Detection Of Neisseria Gonorrhoeae And Method For Screening For A Nucleotide Sequence That Is Specific For A Genetically Distinct Group"
Inventors:	Andrew Lo, et al.
Issue Date:	February 13, 1990
(Doc. No.:	Enz-27)
Patent No.:	4,868,103
Title:	"Analyte Detection By Means Of Energy Transfer"
Inventors:	Jannis G. Stravrianopoulos, et al.
Issue Date:	September 19, 1989
(Doc. No.:	Enz-28)

and in and to said Letters Patent and all divisional, continuing, substitute, renewal, reissue, and all other applications for Letters Enzo Diagnostics, Inc.

Patent which have been or shall be filed in the United States and all foreign countries on any of said improvements; and in and to all original and reissued patents which have been or shall be issued in the United States and all foreign countries on said improvements:

Agrees that said Assignee may apply for and receive Letters Patent for said improvements in its own name; and that, when requested, without charge to but at the expense of said Assignee, its successors, assigns and legal representatives, to carry out in good faith the intent and purpose of this assignment, the undersigned will execute all divisional, continuing, substitute, renewal, reissue, and all other patent applications on any and all said improvements; execute all rightful oaths, assignments, powers of attorney and other papers, communicate to said Assignee, its successors, assigns, and representatives, all facts known to the undersigned relating to said improvements and the history thereof; and generally do everything possible which said Assignee, its successors, assigns or representatives shall consider desirable for aiding in securing and maintaining proper patent protection for said improvements and for vesting title to said improvements and all applications for Letters Patent and all patents on said improvements, in said Assignee, its successors, assigns and legal representatives; and

Covenant with said Assignee, its successors, assigns and legal representatives that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

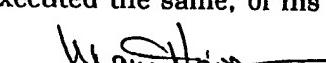
  
Elazar Rabbani, President  
Enzo Biochem, Inc.

#### Acknowledgment

State of NEW YORK  
County of NEW YORK } ss:

On this 1<sup>st</sup> day of April, 1991 personally appeared before me ELAZAR RABBANI to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he executed the same, of his own free will and for the purposes set forth.

MARY HAIG  
Notary Public, State of New York  
No. 41-1628825  
Qualified in Queens County  
Certificate Filed in New York County  
Commission Expires October 31, 1991

  
Mary Haig  
Notary Public

Enzo Diagnostics, Inc.